

*THIS OPINION WAS NOT WRITTEN FOR PUBLICATION*

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MICHAEL STEINMETZ

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Appeal No. 95-4846  
Application 08/023,592<sup>1</sup>

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ON BRIEF

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Before JOHN D. SMITH, WEIFFENBACH and WALTZ, *Administrative  
Patent Judges.*

WALTZ, *Administrative Patent Judge.*

*DECISION ON APPEAL*

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 14 through 16, as amended after the final rejection. The amendment after final rejection dated March 27, 1995 (Paper No. 10) was refused entry by the examiner while the

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<sup>1</sup> Application for patent filed February 26, 1993. According to applicant, this application is a division of Application 07/642,522, filed January 17, 1991, now Patent No. 5,201,635 issued April 13, 1993.

amendment dated April 10, 1995 (Paper No. 11) was entered by the examiner and obviates the final rejection of claims 14 through 16 under 35 U.S.C. § 112, second paragraph (see the Examiner Interview Summary Record dated May 30, 1995 (Paper No. 15) and the Advisory Action dated May 30, 1995 (Paper No. 16)).

According to appellant, the invention is directed to a method of manufacturing a mixing impeller by introducing polyurethane resin into a mold at different times to form an impeller that has a soft outer portion chemically bonded to a stiffer inner portion (brief, pages 2-3). Claim 14 is illustrative of the subject matter on appeal and is reproduced below:

14. A method of making an impeller having inner and outer portions of polyurethane resin having different flexibilities, the outer portion being bonded to the inner portion, the outer portion having greater flexibility than the inner portion, comprising the steps of:

(a) rotating a centrifugal casting mold containing at an outer portion of the mold a first polyurethane resin forming material of predetermined composition,

(b) introducing into an inner portion of said mold a second polyurethane resin forming material of different composition than the first polyurethane resin forming material at said outer portion,

(c) centrifugally casting the first and second polyurethane resin forming materials respectively to form inner and outer portions of said impeller, and

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(d) curing the formed inner and outer portions under conditions of temperature and time to form an impeller disk having inner and outer portions of polyurethane resin having different flexibilities, the outer portion being bonded to the inner portion and having greater flexibility than the inner portion.

The examiner relies upon the following references as evidence of obviousness:

|                                |           |               |
|--------------------------------|-----------|---------------|
| Hoppe et al. (Hoppe)           | 3,052,927 | Sep. 11, 1962 |
| Roberts                        | 3,949,125 | Apr. 6, 1976  |
| Trowbridge et al. (Trowbridge) | 4,171,166 | Oct. 16, 1979 |
| Probst                         | 4,768,574 | Sep. 6, 1988  |

Claims 14 through 16 stand rejected under 35 U.S.C. § 103 as unpatentable over Hoppe in view of Probst, Roberts and Trowbridge (answer, page 4). We reverse this rejection for reasons which follow.

#### OPINION

The examiner concedes that Hoppe "forms a different composite article thus requiring that the polyurethane materials be cast in a different order" but this difference in the order in which the two polyurethanes were cast "was a mere obvious matter of material and article design choices which were of no patentable consequence" since the claimed method must be distinguished manipulatively (answer, pages 8-9). In fact, Hoppe discloses a specific embodiment in Figure 14 of a propeller having high and low density regions similar to the article described in Figure 4 of Hoppe (see column 7, lines 30-41, and

column 8, lines 9-15). In other words, the ends 14 of the propeller in Figure 14 of Hoppe have a high density while the inner portion 15 has a low density.<sup>2</sup>

"[E]very limitation positively recited in a claim must be given effect in order to determine what subject matter that claim defines." See *In re Wilder*, 429 F.2d 447, 450, 166 USPQ 545, 548 (CCPA 1970). The order of casting the polyurethane resins to form an inner and outer portion of the impeller having different flexibilities is a limitation recited in appealed claim 14 and must be given effect. As conceded by the examiner, Hoppe discloses and teaches an order of casting directly the opposite of the claimed order. However, the examiner additionally cites Probst and Roberts to show "the formation of composite articles of multiple layers having different physical and chemical characteristics from each other ... was generally well known and conventional in the art" (answer, page 5).

Roberts is directed to a rigid decorative article that has a pliable outer plastics layer and an essentially rigid interior (abstract, column 1, lines 27-41, and claim 1). The product of

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<sup>2</sup> The examiner has not addressed the correlation of density with flexibility and hardness but presumably the density of the polyurethane correlates with the hardness and inversely correlates with the flexibility. See appellant's specification, page 5, second full paragraph.

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Roberts is said to have only two required components whereas the prior art requires four components (column 3, lines 2-5).

Probst is drawn to a valve for vehicle tires having a hardness at the inside surfaces that is higher than at the base portion (abstract, column 1, lines 36-44). According to Probst, this stepless transition between the softer and harder regions provides a desired simplification in manufacture and a high level of operational reliability (column 1, line 60-column 2, line 6, and column 2, lines 31-34).

The examiner has failed to establish why Probst and Roberts would have suggested to the artisan the desirability of modifying the order to casting the polyurethane in the Hoppe process. See *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification [citations omitted].")

Appellant argues that nothing in this record suggests combining this art (brief, page 3). "It is well established that before a conclusion of obviousness may be made based on a combination of references, there must have been a reason, suggestion, or motivation to lead an inventor to combine those

references." See *Pro-Mold and Tool Co. v. Great Lakes Plastics Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1629 (Fed. Cir. 1996).

We find that the examiner has not provided any reason, suggestion, or motivation, and we perceive none, as to why the artisan would modify the centrifugal casting method of Hoppe in view of the methods disclosed by Probst and Roberts.

Furthermore, the claimed subject matter, in general terms, is a method of making an impeller having specific polyurethane inner and outer portions with different flexibilities. On this record, the composite impeller having two portions with differing flexibilities and hardnesses has not been asserted to lack novelty. Indeed, the impeller comprising a disk having inner and outer portions of polyurethane resin having different flexibilities, the outer portion being bonded to the inner portion and having greater flexibility than the inner portion, has been patented in U.S. Patent 5,201,635, of which appellant states this application is a division. In view of *In re Ochiai*<sup>3</sup> and *In re Brouwer*<sup>4</sup>, the language in a process claim which recites making

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<sup>3</sup> 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995).

<sup>4</sup> 77 F.3d 422, 425-26, 37 USPQ2d 1663, 1665-66 (Fed. Cir. 1996).

or using a nonobvious product must be treated as a material limitation, and a motivation to make or use the nonobvious product must be present in the prior art for a § 103 rejection to be affirmed. See "Guidance on Treatment of Product and Process Claims in light of *In re Ochiai*, *In re Brouwer* and 35 U.S.C. § 103(b)", published at 1184 Off. Gaz. 86 on March 26, 1996.

We find no motivation presented in the prior art as applied by the examiner. Hoppe teaches a propeller with the high density, presumably less flexible polyurethane at the tips while the inner portion contains the lower density, presumably more flexible polyurethane (see Figure 14 and its description in column 8). Trowbridge discloses an impeller of a single type of polyethylene (column 1, lines 53-54, and column 3, lines 25-32). Probst and Roberts do disclose molding one piece articles by use of two compositions to provide varying properties but the examiner has not pointed out, and we do not perceive, any reasons or motivation for using the molding technique of Probst or Roberts in the process of casting the propeller of Hoppe.

For the foregoing reasons, we find that the examiner has failed to meet the initial burden of establishing *prima facie* case of obviousness. See *In re Oetiker*, 977 F.2d 1443, 1445,

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24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d  
729, 733, 226 USPQ 870, 873 (Fed. Cir. 1985). Accordingly, the



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decision of the examiner rejecting claims 14 through 16 under  
35 U.S.C. § 103 as unpatentable over Hoppe in view of Probst,  
Roberts, and Trowbridge is reversed.

*REVERSED*

|                             |   |                 |
|-----------------------------|---|-----------------|
| JOHN D. SMITH               | ) |                 |
| Administrative Patent Judge | ) |                 |
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|                             | ) |                 |
|                             | ) |                 |
| CAMERON WEIFFENBACH         | ) | BOARD OF PATENT |
| Administrative Patent Judge | ) | APPEALS AND     |
|                             | ) | INTERFERENCES   |
|                             | ) |                 |
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| THOMAS A. WALTZ             | ) |                 |
| Administrative Patent Judge | ) |                 |

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